Valve Detector Receiver

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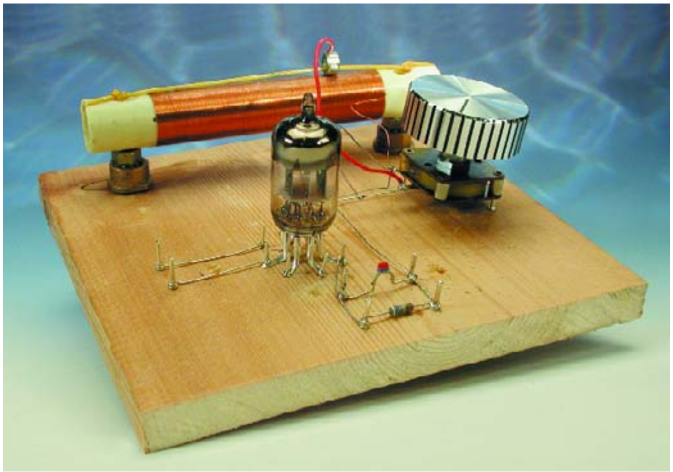

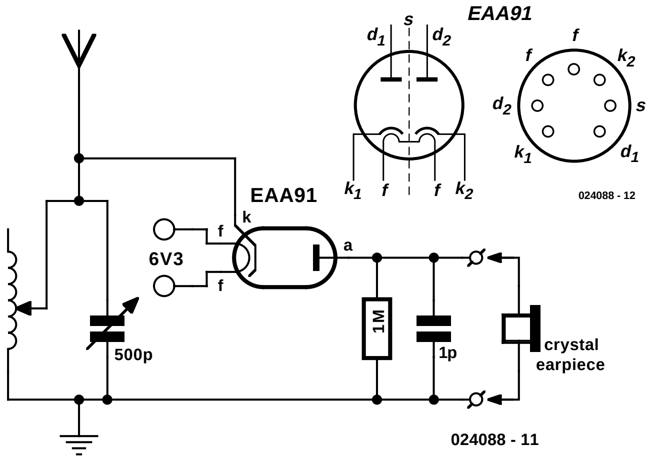

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The valve detector receiver is the logical extension of the crystal detector. This circuit can achieve astonishingly good selectivity, since the rectifier circuit is designed to have very high impedance. The valve detector receiver can be connected to an active PC speaker or a crystal earphone, for example, and it generates genuine 'valve sound'.

The EAA91 is a dual diode with a 6 V / 300 mA filament. In contrast to a semiconductor diode made of germanium or silicon, it does not require a minimum voltage (threshold voltage) to arrive at the knee of its characteristic curve. In fact, some electrons will reach the anode even if there is no anode voltage present. A short-circuit current of around 30 µA can be measured. A voltage of no less than 0.5 V appears across a load resistance of 1 MΩ. The valve itself generates a suitable bias voltage.

As can be seen from the photo, the coil is wound in the form of a close-wound coil on a piece of PVC conduit with a diameter of 15ter enamelled copper wire. If the full number of turns is used, the tuning range of the rotary variable capacitor essentially covers the medium-wave band. To extend the range to higher frequencies in the low and medium short-wave bands (above around 1.5 MHz), a tuneable version of the coil can be constructed using an adjustable tap (slider), as shown in the schematic diagram. The practical implementation of this can also be seen in the photo.

The variable capacitor does not have a fixed connection to both ends of the coil, but only to the grounded end of the winding. The aerial terminal of the variable capacitor is connected to a movable coil tap (slider). To obtain an adjustable connection to the coil, carefully sand the top surface of the coil to remove the enamel coating along the path of the slider. The sliding contact consists of a small brass or steel ring. It can be made by cutting a short length (approximately 3 mm) from a metallic tube with a diameter of around 8 mm, which can be found ready-made in electronics parts catalogues under the category of 'assembly materials' in the form of a nickel-plated standoff. The guide can be formed by a strip of plastic or rubber stretched over the length of the coil and attached to each end of the PVC tube (drill fastening holes in the ends of the tube for this purpose). Use a length of flexible, insulated stranded wire soldered to the slider roller to connect the slider to the aerial terminal of the variable capacitor.
The capacitance of the rotary tuning capacitor is 500 pF.

A large number of European transmitters can be received using a wire aerial with a length of around 5 m. Reception for transmitters in the short-wave bands is good during both the daytime and evening hours, but for medium-wave transmitters it is usually best in the evening.

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